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Vol. XXXI, No. 12 December, 1948

TABLE OF CONTENTS

Page

Berylliosis, *Stanley A. Wilson,* M.D. 719

Spinal Anesthesia in Vaginal Deliveries, *Walter J. Dufresne,* M.D. *and Howard W. Umstead,* M.D. 723

Myxedema and Psychosis, A Case Report, *James J. Scanlan,* M.D. 725

What Good are Health Museums? *Bruno Gebhard,* M.D. 732

EDITORIALS

Internal Medicine in Central Europe 728

Case Finding in Tuberculosis 730

Changes 730

Cancer Conference 731

Rhode Island Hospital Staff Dinner 731

MISCELLANEOUS

Book Reviews 748

Cash Sickness, Sample Study of Claims 744

College of Surgeons, New Fellows from Rhode Island 743

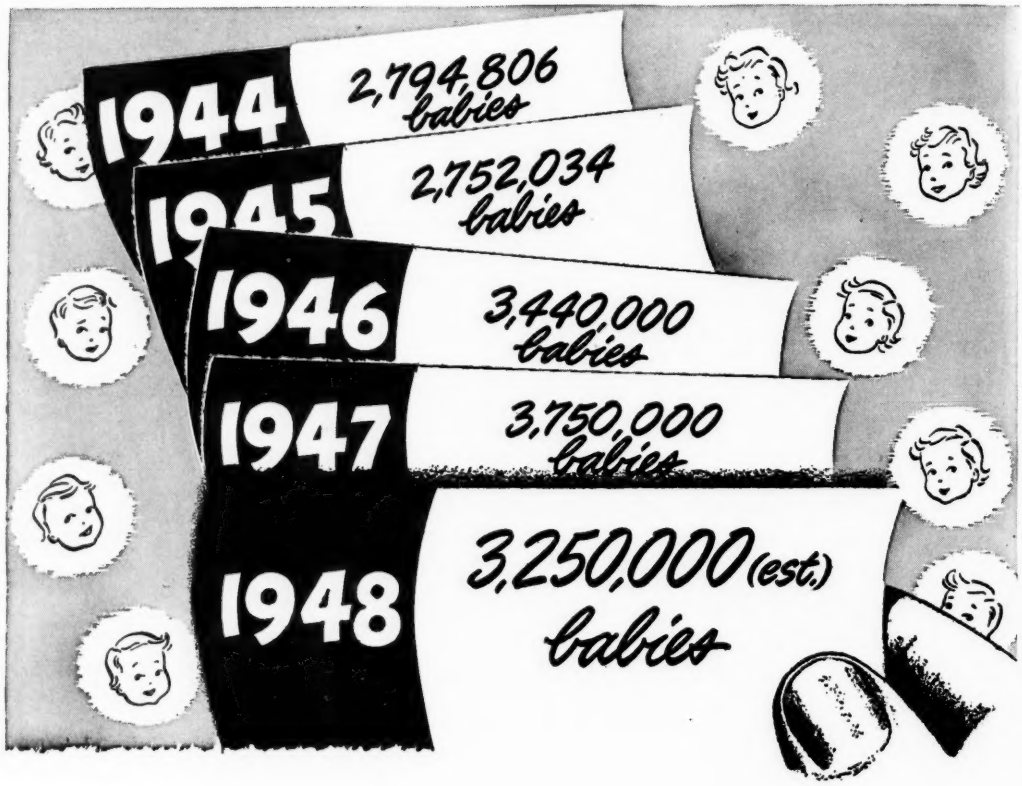
District Medical Society Meetings 738

Index of Advertisers 755

Malpighi Medical Club, Report of meeting 743

New England Leaders 727

Medical Library Notes 740



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The RHODE ISLAND MEDICAL JOURNAL

VOL. XXXI DECEMBER, 1948 NO. 12

BERYLLIOSIS*

STANLEY A. WILSON, M.D.

The Author. *Stanley A. Wilson, M.D., of Salem, Massachusetts. Roentgenologist, Salem Hospital.*

IN THIS PAPER the disease will be referred to as Berylliosis, since, in the opinion of the author, sufficient evidence has accumulated to indict Be and its compounds as the main etiological factor, if not the only one. There is not full accord on this point, therefore the term Berylliosis has not been universally accepted as the proper nomenclature; but its use is becoming much more common. Various titles have been applied to the condition in the past, such as, "Pneumonitis of Be Workers," "Pulmonary Granulomatosis of Be Workers," "Delayed Chemical Pneumonitis," and others. The most significant evidence in condemning Be is the occurrence of similar disease in several different industries in which the only common denominator is Be in some form.

Be is not a commonly known element, therefore, a short description of it and its uses seems pertinent to this discussion. In nature, it occurs most commonly as a double silicate with aluminum in the ore known as Beryl. The metal is soluble in acids, and these are used in the process of its extraction. (This is significant as the acid radicle has been blamed for the acute pneumonitis occurring in workers extracting ore). In the pure state, Be is a brittle steel grey substance which resists rolling, drawing, and filing as it turns to powder when machined. Small amounts added to other metals, however, produce alloys of great tensile strength and low fatigue rate which are non-magnetic, do not spark, and are good conductors of electricity. This knowledge explains its high priority rate during the recent war and its popularity in industry since. Other uses to which it is put are in the manufacture of ceramics, x-ray tube windows, phosphors used in fluorescent lighting and signs, atomic energy piles, research laboratories, pharmaceutical plants, electronics, and undoubtedly many others still uncovered.

Its use was very limited in this country prior to 1940 and probably explains the absence of any reference to its toxicity in our own medical literature until 1943, though several articles had appeared in European journals dating back to 1933. Our attention was first called to it by VanOrdstrand, Hughes, and Carmody in an article entitled, "Chemical Pneumonia in Workers Extracting Beryllium Oxide," which appeared in the Cleveland Clinic Quarterly, 1943. In that same year, Hyslop, Fairhall and their associates discussed the toxicity of Be in an article appearing in the Nat. Inst. of Health Bulletin. Kress and Crispell of the Guthrie Clinic described a chemical pneumonitis in men working with flourescent powders containing Be in 1944. These reports all dealt with what has been considered the acute type. In recording the findings in 38 cases of the acute form in which 5 terminated fatally, VanOrdstrand and his associates bring out the following facts: The incidence and severity are proportionate to degree of exposure and chemical irritation of dusts and fumes. No single work station could be isolated, and the duration of exposure varied considerably. Most of the patients recovered in a few weeks or months following rest and removal from exposure, but recurrence took place with re-exposure. The onset was insidious but was not a delayed reaction. It was characterized by cough and occasional dull, burning substernal pain. Dyspnea soon followed onset of the cough, and cyanosis became evident in some cases. Abnormal taste, anorexia, weight loss, and increasing fatigue were consistent findings. Absence of signs of infection, a rapid pulse, very little elevation of temperature, and absence of pathogens in the sputum were significant findings.

In 1942, a middle-aged female employee of a flourescent lamp plant developed a peculiar pul-

continued on next page

* Presented before the Providence Medical Association, October 4, 1948, under title "Pulmonary Changes occurring In Beryllium Workers."

monary disease with diffuse miliary lesions in both lungs demonstrated by a roentgenogram of the chest. She had suffered from progressive loss of weight, dyspnea, and cough, because of which she was referred to a T.B. sanatorium where several diagnoses were entertained. She eventually expired from what was thought to be edma of the larynx and was signed out as pulmonary sarcoidosis. A similar diagnosis at that time was returned by the pathologist who conducted the autopsy. The case aroused only passing interest, until during the following year, ten other employees in the same plant became ill with similar clinical history, physical and roentgen findings. It then became apparent that an industrial hazard must be considered, and Tabershaw and Hardy of the U. S. Public Health and Dept. of Occupational Hygiene for the State of Massachusetts were called in. After studying the available clinical records of these eleven cases and six others, they published a report in the Journal of Industrial Hygiene and Toxicology of 1946, offering the title, "Delayed Chemical Pneumonitis." In 1947, Higgins reported the same series in the Conn. State Medical Journal calling it, "Pulmonary Sarcoidosis." The late Leroy Gardner, after considerable clinical and experimental research, suggested the title, "Pulmonary Granulomatosis."

The roentgenological study of these cases since 1942, and opportunity for clinical follow-up as well, since 1947 has been the privilege of this author. Over fifty cases are now included with eight deaths, several of which have been studied at post-mortem. The series includes fifteen males and the balance, females with no fatalities in the male group. This ratio of males to females corresponds closely to the employment census. All of them were exposed during the years 1940 to 1942 when phosphors used in the manufacture of flourescent lamps in this plant contained 12% Be. No employees exposed to the lower percentage (2%) of Be phosphors since 1942 have shown any evidence of disease.

In preparation for this presentation the histories of thirty-nine of the group were reviewed. These showed that 5 developed symptoms within one year following exposure, 6 in two years, 9 in three years, 8 in four years, and 2 in six years. Analysis of presenting symptoms at onset of disease revealed that cough, dyspnea, and weight loss either singly or in combination were most common. Cough — 19. Dyspnea — 15. Weight loss — 15. Fatigue — 9. Nervous irritability — 6. Chest pain — 4. Neuro-muscular or arthritic pain — 3. Gastro-intestinal symptoms — 3. As the course of their disease progressed, many or all of these symptoms developed in nearly every case. The onset in one was complicated by hyperthyroidism, another by typhoid fever, and eleven followed pregnancy. Four were symptom-free and picked up by routine chest roentgenograms. A recent survey will add at least three more to this latter group.

The final diagnosis has been greatly dependent upon recognition of roentgen changes combined with clinical history, but physical examinations and laboratory findings have been necessary parts of the study in order to rule out other conditions. No one procedure has rendered any information which can be termed pathognomonic of this disease, but since the roentgenological examination plays such an important role, more space has been devoted to it in this presentation. This necessitates a consideration of, at least, two forms of response; namely, acute and chronic as has been denoted clinically. The type and degree of exposure, including particle size, percentage air saturation, duration, solubility of the compound inhaled, and many other factors must be considered in determining the reason for this difference in reaction and, therefore, the roentgen pattern. In this study, an attempt has been made to reconstruct the probable changes taking place and correlate these with the x-ray findings. In doing so, Sayer's classification of dust exposures has been followed. Time does not permit a description of this classification and is not necessary to the following description of the roentgen findings.

In the acute cases, there is similarity of roentgen pattern which would lead one to suspect that they might be due to the same cause, but there is a variation to be noted in some. In the course of the disease, there is one significant finding; namely, the delay between onset of symptoms and the first appearance of roentgenological evidence of pathology. Increased linear markings and some granularity consistent with pulmonary congestion might be expected as the first positive roentgent evidence of disease, but the ground-glass density of pulmonary edema seems to manifest itself two to three weeks after onset of symptoms. It does not necessarily involve both lungs uniformly or completely but may confine itself to the mid-lung field or base in one or both sides. This seems to resolve itself into shadows of a denser character indicative of consolidation in either a lobar or bronchial distribution. With clinical improvement, a granular and nodular pattern with conglomerate masses asserts itself for a time before clearing of the lung, following which there may or may not be signs of residual fibrosis. Clearing has usually taken place within one to four months and before all clinical evidence of the disease has disappeared. If one reviews these findings, it is apparent that there is no significant roentgen change that cannot be associated with the various acute pneumonias due to other causes. The history of exposure, absence of

pathogens, and other signs of infection are helpful in diagnosis, however.

CHRONIC PULMONARY GRANULOMATOSIS—Delayed onset of symptoms and roentgen evidence of disease following exposure has been a characteristic feature in Chronic Pulmonary Granulomatosis of Be Workers. Either due to absence of symptoms and failure to obtain frequent examinations, inability to carry on a careful follow-up on exposed personnel, or what seems more likely, actual lack of significant variation from the normal, x-rays have failed to provide an early diagnosis during the latent period. Following the recognition of this as an industrial hazard in 1943, a prompt mass survey by chest roentgenography was conducted in the plants where exposure was suspected. Unfortunately, all of the fourteen hundred persons now believed to have been exposed could not be examined, but a large percentage of them was included in the series. From this study, only three accepted cases and five suspected cases have been uncovered. The others were all considered essentially normal. In spite of this, several cases have developed disease in the group examined. One, at least, within a month after having had normal roentgen findings, showed symptoms and a characteristic roentgenogram. The original films of these cases were reviewed by a number of competent radiologists, and in nearly every instance the consensus was that the findings were within the range of normal.

The changes seen in accepted cases offer a roentgen classification of types or stages as follows: 1. Granular. 2. Granulonodular. 3. Nodular with emphysema. The earliest recognizable abnormality has been a fine sandlike pattern or stippling throughout both lungs and evenly distributed from apices to bases. This type of response possibly represents interstitial thickening due to congestion and edema. It appears more particulate than the usual conception of pulmonary edema, however, and probably is a manifestation of early fibrous change with small granuloma formation. This type may persist for many weeks or months, and in a few cases has been seen throughout the course of observation over periods of one to five years. Either it does not occur, or has progressed to a later stage in other cases, as the presenting roentgenograms at the onset of symptoms in some have shown distinct nodularity. The highest percentage of cases showing a persistent granular pattern but with fine nodularity has been noted among the male patients, who show less disability. Whether this has any significance has not yet been determined. In Type I or Stage I of the disease, prominent lung root shadows and vascular markings do not seem to be featured and may be obscured. There are no recognizable signs of emphysema, pleural or cardiac complications.

The second type or Stage II shows more prominent nodulation with a somewhat reticulated pattern and the sandlike background still present. The nodularity, too, appears more or less uniform in size and distribution but, at times, with apparently more involvement in some portions of the lung fields than in others. The outline of the lung root shadows and the usual linear markings are indistinct, but paratracheal and hilar masses are frequently visible. There is little recognizable emphysema present, and only occasionally does there appear to be definite evidence of early cor-pulmonale with prominence of the pulmonary artery and right-sided enlargement. Such roentgen findings may persist for many months and, in most instances, progress to a form designated as Stage III. In three cases it has been possible to positively state that regression of roentgen findings has taken place, but before they had reached Stage III. One shows residual linear fibrosis with no nodulation, the others still have indistinct nodulation, and all have diminished pulmonary function.

In Stage III, the nodular shadows have become larger but still do not exceed five millimeters in diameter and may be as small as one. Between these, there are now clear areas of varying sizes, which undoubtedly represent emphysematous spaces with intervening linear fibrosis. Portions of the lung fields, particularly the bases, give the impression of clearing, but this is usually due to increasing emphysema rather than improvement in the disease. The excursion of the diaphragms is limited, fluoroscopically, and the short septum on the right becomes prominent and elevated. The upper lobes, particularly the right, become smaller because of partial atelectasis, and their density increased by closer packing of the nodular coalescence of the lesions. Signs of cor pulmonale are usually quite apparent at this time. Eight of the cases have suffered spontaneous pneumothorax. Four of these have experienced severe pulmonary and cardiac embarrassment. There have been no signs of pleural effusion in any of these cases, and the air in the pleural cavity has been absorbed in about two weeks with no apparent complications. In fact, four of the cases have seemed to improve for a time following recovery from this episode. To date, there has been no instance of a reversal of the process after Stage 3 has been reached.

These represent the types or stages encountered in a group of over fifty cases exposed to lamp phosphors containing zinc manganese beryllium silicate. A smaller series with similar roentgenographic changes have been studied where the exposure compound was either beryllium metal, the oxide, or possibly one of the acid salts. A group of cases

continued on next page

exposed to beryllium in the production of alloys at a metallurgical plant have shown a somewhat different combination of roentgenological findings, however. The sandlike densities and the nodularity have been present but in less uniform distribution. The most significant difference from the above groups has been the development of large conglomerate masses or areas of consolidation and prominent linear fibrosis.

X-ray examinations of other systems in many of the chronic cases have been consistently negative with the exception of the urinary tract. Six cases of urinary calculi have occurred. The bony skeleton has not shown any significant abnormality.

Before considering differential diagnosis, certain roentgenological features of this disease should be emphasized. In the chronic form, the characteristic lesion is a small granuloma which manifests itself as a small granular or nodular shadow in the roentgenogram. There is miliary and somewhat uniform distribution. They do not, in most instances, coalesce to form large lesions but can occasionally and appear as conglomerate masses. They do not calcify or cavitate, and the pleura does not appear to be involved. An earlier report of these cases inferred that the sandlike pattern as described was almost pathognomonic. It does characterize this disease but may be encountered in other conditions which stimulate a similar pulmonary response and cannot be entirely relied upon. Differential diagnosis is not easy, and one must depend upon history, clincal findings, laboratory studies, and the law of averages, as well as the x-ray examination. Conditions which may be confused with chronic berylliosis are many. Other diseases which can produce miliary nodular shadows in the lung fields must be considered even though this is not their usual manifestation.

The pathological findings in the acute cases were those of atypical pneumonitis, pulmonary edema, and hemorrhagic extravasation. Plasma cells were found in large numbers, but there was a relative absence of polymorphonuclear infiltration.

The lesion seen in the so-called chronic pulmonary granulomata occurring in beryllium workers is recognized grossly as very small, pinhead-sized, whitish nodules found diffusely throughout the lobes of the lung. The draining lymph nodes occasionally are enlarged and may show areas of a granular, grayish white necrosis partially or completely replacing the lymph node. Microscopically the lesions are found both within the air sacs and in the supporting framework of the lung, and it is thought that several different stages of development are to be recognized. The earliest lesion is usually seen within the alveoli and consists of aggregations of large mononuclear cells, so-called histiocytes, associated with a moderate amount of edema. Later, nodules within the framework of similar histiocytes are seen which are surrounded by a zone of lymphocytes and occasional plasma cells. The next phase is that of necrosis within the central masses of the histiocytes occasionally associated with the presence of large foreign body type giant cells and with increasing fibrosis about the periphery of the granuloma accompanied by a moderate accumulation of lymphocytes and plasma cells. The end stage is represented by an area of marked hyalimization. With special stains the reticular framework within the early granulomas is destroyed in the stages in which necrosis is present and in some of the earlier granulomas there appears to be a distinct increase of reticulum either arising from blood vessels or possibly being formed by histiocytes.

No specific treatment has been found for this disease, though every known means has been tried to improve the exchange of gases in the lungs. Most cases are treated symptomatically with oxygen therapy and rest as the chief stand-bys. High protein diet, vitamins, sedatives, etc. all have their place, but care of these cases can be, and is, very discouraging. Many cases show improvement, some are clinically well, a few show roentgenological improvement, but many are slowly, yet progressively, becoming worse, or at best, remaining stationary. Some have periods of improvement followed by recurrences of severe cough and dyspnea, possibly explained by secondary infection or cardiac decompensation. All show lowered vital capacity and decreased breath-holding time which may be used as a rough guide in evaluating symptomatic improvement.

Before concluding, some mention should be made of the extensive research being carried out, control of the hazards, so-called "neighborhood cases," the skin manifestations, eye complications, and methods of determining the presence and amounts of beryllium in tissues and excretions of the body, but these could easily fill another paper.

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SPINAL ANESTHESIA IN VAGINAL DELIVERIES*

WALTER J. DUFRESNE, M.D. AND HOWARD W. UMSTEAD, M.D.

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OBSTETRICAL ANESTHESIA had its beginning during the reign of Queen Victoria when ether and chloroform were first used to alleviate the travail of labor. Until this time, the biblical dictum "In sorrow thou shall bring forth children" was accepted without reservation and any attempts to lessen or shorten the tortures of labor were considered sacrilegious. However, Queen Victoria requested chloroform anesthesia when delivered by John Snow and a new era was begun.

From that time on, man has marched steadily forward in his fight against pain. Chloroform, ether, chloral hydrate, nitrous oxide, cyclopropane, paraldehyde, morphine, scopolamine, demerol, and the barbiturates have all enjoyed varying degrees of popularity. It has been found that it is not good practice to prescribe by rule of thumb, the same anesthesia for all obstetrical cases. There is no one form of pain relief suited for every case. With each problem, one considers the existing complications, the position and condition of the baby, and the limitations of the attending anesthetist.

Spinal anesthesia in obstetrics was reported as early as 1900 by Kreis,[2] in 1928, Pitkin and McCormack[1] introduced a form of spinal anesthesia. A saddle type anesthesia obtained by anesthetizing only the sacral segment of the cord, the cervix, vagina, perineum, vulva and the sphincter of the bladder and the anus were affected. The body of the uterus was not affected. The labor pains proceeded unabated but because of the high degree of relaxation of the outlet, the actual delivery was quick, easy and painless. The first injection usually lasted 1½ hours and was repeated if it proved insufficient to complete the delivery (20 mg. of procaine in hypeboric spinal mixture). From that time on spinal anesthesia has steadily grown in popularity and during the past ten years, there has been many favorable reports appearing in anesthesia and obstetrical journals. Of the recent investigators, Cosgrove has accumulated the largest series of deliveries under spinal anesthesia. In 1937, he and Gleason reported on their experiences in 2789 cases[3] and reported the procedure highly satisfactory. A recent communication from Dr. Cosgrove states "spinal anesthesia is not the most frequently used here at Margaret Hague for vaginal deliveries, because in the hurry of a very active service, inhalation anesthesia is less time consuming and troublesome, but it is still our method of choice whenever either the mother or the baby is considered to be in any way handicapped."

In June, 1946, Dr. Weaver[4] and his associates at the Hamilton General Hospital of Ontario, reported on their experiences in 1547 cases and stated in the conclusions, there were no maternal deaths. Stillbirths and neonatal deaths have been definitely fewer than with general anesthesia. The local popularity both with patients and physicians have increased steadily.

About a year ago, we made an attempt to apply spinal anesthesia at the Memorial Hospital for vaginal deliveries, but our early enthusiasm was dampened by a high incidence of spinal headaches. For some unexplained reason, the pregnant female was more prone to develop a spinal headache than her non-pregnant sister, who received a spinal anesthesia for general surgery. Because of this troublesome complication, we used this method in only about 30 vaginal deliveries during the year.

Recently, it came to our attention that Dr. Wolff[5] attributed spinal anesthesia headaches to traction by the brain on various pain sensitive structures which anchor it to the cranium. Such traction follows a disturbance in intercranial hydrodynamics which is brought about by leakage of the spinal fluid at the puncture site. This may be partly or completely alleviated by the use of a smaller needle. We have substituted a 22 gauge needle in place of the usual 19 or 20 gauge needle and have had no headaches in 10 or more cases.

Throughout the year an attempt has been made to develop a good spinal technique. Numerous patients requiring low spinal anesthesia for gen-

continued on next page

*Presented at the 137th Annual Meeting of the Rhode Island Medical Society, at Providence, May 13, 1948

eral surgery have received varying mixtures of pontocaine in 10% dextrose, pontocaine in 5% dextrose, and pontocaine dissolved in spinal fluid. Thus far, we have had the best results with a mixture of 1% pontocaine and 10% dextrose. This mixture permits the greatest reduction in the amount of anaesthetic drug consistent with an anesthesia of suitable duration and extent. Very early in our experience with obstetrical patients, it was found necessary to achieve a level of skin anesthesia to a point about one inch below the umbilicus in order to obtain a complete relief of pain. If the anesthesia fixes at a lower level most patients will continue to have pain with each uterine contraction and more severe pain when traction is made during forceps delivery. It was also found important to consider the length of the patient's spine if the amount of anesthetic was to be kept at a minimum. In the majority of patients, it is sufficient to know their height and use this measurement as an indirect determination of the length of their spinal column. With other patients who show an obvious disproportion in the length of their legs as compared with the length of their trunks, a moment is required to measure the length of the spine. The spine is measured in a flexed position from the prominence of the spinous process of the 7th cervical vertebra to the 4th lumbar interspace. It was found that the very short patient is the most frequent offender in the disproportion. In this way, each patient can be properly accommodated to the dosage table and a higher percentage of satisfactory anesthesias will be obtained. Our present scheme for determining the proper dosage is listed below. We expect that some minor changes will be made as our experience increases.

Height	*Average Length of Spine*	*1% Pontocaine*	*10% Dextrose*
4′ 9″ to 5′ 1″	15″	0.3 c.c.	1.2 c.c
5′ 1″ to 5′ 3″	16″	0.4 c.c.	1.2 c.c
5′ 3″ to 5′ 5″	17″	0.5 c.c.	1.4 c.c.
5′ 5″ to 5′ 7″	18″	0.6 c.c.	1.4 c.c.
5′ 7″ to 5′ 10″	18½″	0.7 c.c.	1.6 c.c.

The smaller amounts are more accurately measured by using double the quantities and discarding half of the resultant mixture. These mixtures have been used in a large variety of patients of varying ages and illnesses. Thus far in only a very few instances has it been necessary to give supportive treatment for excessive blood pressure fall occurring soon after the spinal injection. However, one must always be prepared to administer ephedrine or some other suitable vasoconstrictor intravenously should the occasion arise.

A means of supporting respiration and administering oxygen is essential for anyone who attempts a spinal anesthesia. The technique followed for administering spinal anesthesia is as follows. With the table in a horizontal position, the patient is placed on her side in the usual position for a lumbar puncture. A moderate dose of ephedrine (40 mg.) is given in the buttocks five minutes before injecting the anesthetic mixture. A skin wheal is then raised between the 4th and 5th lumbar spines and the lumbar puncture is made in the 4th lumbar space with a 22 gauge needle.

A mixture of pontocaine and dextrose is injected at the rate of approximately one c.c. per second and no spinal fluid is aspirated into the syringe either before or at the end of the injection. After the needle is withdrawn, the patient is turned to a dorsal recumbent position without delay. Approximately 7 minutes should elapse before moving the patient into a delivery position if the best results are to be obtained. With careful attention to dosage and technique a high percentage of the anesthesia will be fixed at a level of either the 9th, 10th or 11th dorsal segment, that is, in the area between a point two inches above the umbilicus and a point one inch below the umbilicus. A small percentage (approximately 2%) may extend to levels above the 9th dorsal segment if preventative measures are not instituted. Hence, it is essential to follow the progress of the anesthesia clinically and to retard the upward spread of the heavy anesthetic mixture whenever unnecessarily high levels appear likely. One soon learns the usual rate of spread and recognizes without difficulty those cases showing a tendency toward levels above the umbilicus. The sitting position, Fowler's position, or elevating the shoulders on pillows will correct the situation and protect these patients. Twelve minutes after injecting the anesthetic solution the anesthetic drug is "fixed" in the nerve tissue and will not be influenced by changes in position. The upper level of the anesthesia will last approximately 1 to 1½ hours. Soon after that time, labor pains will recur if the baby has not been delivered. The application of traction such as accompanies forceps delivery will also cause pain at this time. Anesthesia of the perineum, however, is present at the end of 1½ to 2 hours and sometimes even longer. With this time limitation considerable obstetrical judgment must be employed to designate when the anesthesia should be administered. Full dilatation of the cervix in the primiparous patient is necessary if anesthesia failures are to be avoided.

With the multipara, each case presents a new problem as to the most opportune time to give the injection. Most of our experience has been confined to primipara except for a few multip who presented obstetrical complications. All but two of our cases have required forceps delivery. Because of the anesthesia, patients do not feel their contractions nor do they have a desire to bear down. The incidence of forceps delivery can be cut down 10% to 50% if the patient is encouraged to push down

continued on page 727

MYXEDEMA AND PSYCHOSIS*

— A Case Report —

JAMES J. SCANLAN, M.D.

The Author. *James J. Scanlan, M.D., Intern, St. Joseph's Hospital, Providence, R. I.*

THE INTIMATE association of mind and body is nowhere more forcibly illustrated in the field of medicine than in the psychic manifestations of endocrine disease. The effects of a distorted endocrine pattern are mirrored in the individual's mind equally as much as they are in his physical end organs. The evidence for this positive interdependence of "psyche" and "soma" is all the more striking when the mental disturbances attendant upon an endocrinopathy are restored to normal by hormone substitution therapy.

Myxedema presents an endocrine dysfunction that is amenable to cure by replacement therapy; hence, in the course of treatment one might expect the alleviation of its associated psychic and psychomotor symptoms. Characteristically, these symptoms belonging to the hypothyroid state consist of inability to concentrate, apathy, clouding of the consciousness and a general sluggishness of mental reactions. Occasionally, however, as in the case presented here, genuine psychoses develop.

The patient was a forty-seven year old, Norwegian-born woman whose chief complaint on entry into the hospital was one of extreme weakness and lethargy. These symptoms had begun three years before admission at about the time of her menopause. She first noticed a tendency to tire easily, which progressed as time went on to the point of marked weakness following any exertion. Six months before entry she was seen by her physician who, on finding her to be anemic, gave her liver and iron injections at sporadic intervals for several months. The irregularity of her appearance at the doctor's office for these injections was occasioned by her inability to pay the physician and by a natural repugnance for charity.

There were some elements in her domestic life which must be pointed out here to understand their effect on her pre-psychotic personality and to note their undoubted contribution to the further progress of her disease. She was an intelligent, cultured and conscientious woman of a cheerful, though retiring, disposition. Her friends knew her to be a good mother, patient in the face of difficulties, even-tempered and gracious. She had at one time been well-off financially and had lived with her husband and two children in some of the better New York hotels. Her husband lost heavily during the depression, so that they were ultimately forced to sell most of their household possessions and to move to more modest quarters in a small Connecticut town. Thereafter, her husband became hopelessly inadequate as a family provider. He began drinking inordinately and during his bouts of inebriation would malign and beat her. He stole small pieces of her jewelry, which she had retained as remembrances of her home in Norway, and he pawned them for money to buy more liquor. At long last, the domestic relations were strained to the breaking point and she left with the two children.

Forced now to support the children by dint of her own labor, she moved from place to place seeking odd jobs. Finally, she came to Providence where she obtained work as a sales clerk in one of the large department stores. At this juncture, her symptoms of asthenia and lethargy began to develop. She was much concerned over the welfare of her two children — one of whom was a boy now in high school, the other a girl of grammar school age — and she felt a deep sense of obligation to work for them despite her impaired health.

During the year before admission to the hospital, she gradually developed puffiness of the eyes and face, her hair became coarse and lusterless and her skin assumed a dry, scaling appearance. She lost much of her axillary and pubic hair. Her mouth was continually dry and she became chronically constipated.

She found that she could no longer concentrate on figures in making out the sales slips at work. She became more and more tired, so that she was able to work efficiently for shorter and shorter periods during the day. When she went home at night, her only desire was to go to bed immediately, although a full night's rest did little to relieve her asthenia. Later, when her son joined the Navy, her sleep was disturbed by the constant worry over his fate in the war.

continued on next page

* Presented before the Providence Medical Association, October 4, 1948.

able to stand on her feet at the store. She was called to the manager of the store because her

During the week before entry, she was barely book-keeping accounts were out of order. This resulted in her thinking that the other sales clerks were spying on her and were reporting her to the office. She felt that people were watching her every move.

Her physical exhaustion reached its zenith on the day before admission. She left the department store early in the afternoon, but was completely amnesic regarding any of the events that followed. Her sister revealed that the patient went home and dropped on the bed, but several hours later became so delerious that she could not be managed at home. She thrashed about the bed wildly and had highly imaginative, visual hallucinations. She kept referring to a sundry group of people who were following her. Even on the way to the hospital in the ambulance, she believed that she was being taken to the State Mental Institution.

When first seen on the Medical Ward, she was found to be a well nourished woman with a yellow-tinged, waxy pallor to her skin. She was not then actively delerious, but was in good contact. She was extremely lethargic and spoke in a soft, slow monotonous voice. She had a typical myxedemic facies, her puffy eyelids with narrowed palpebral fissures giving it a Mongoloid expression. Responses to questioning were given after what seemed to periods of long deliberation and, although not accompanied by any facial show of emotion, her answers were always pertinent to the subject and rational.

Her forehead was furrowed with many fine wrinkles. The skin was dry, coarse and myxedematous, the most marked thickening ocurring over the forearms, hands and pre-tibial regions. Her scalp hair was dry and brittle, the lateral thirds of her eyebrows were absent and her axillary and pubic hair were greatly diminished. Her tongue was thick and appeared to augment the speech defect. The heart rate was 52, the sounds were very faint, but there was no evidence of enlargement and the rhythm was regular. The abdomen was distended and tympanitic. All the deep tendon reflexes were hypoactive and the muscles relaxed slowly after contracture. The rest of the examination was essentially negative.

Laboratory work revealed normal urinary findings. There was an anemia with a hemoglobin of 56% (8.7 Gm.), red blood cell count — 2,920,000, hematocrit — 26, mean corpuscular volume — 89 cubic micra, mean corpuscular hemoglobin — 29 micromicrograms, mean corpuscular hemoglobin concentration — 33 per cent. White blood count was 8,000, with a differential count of 68% polys and 32% lymphocytes. The BMR was minus 18% and the serum cholesterol 340 mg. An EKG showed low voltages in all leads. X-ray of the chest revealed the heart to be normal in size, shape, and position and there was no evidence of pulmonary pathology.

During the first night of her hospital stay, she became wholly irrational. She screamed without apparent cause at the nurses and other patients, occasionally with a great show of fear and apprehension. She attempted to get out of bed despite the presence of side-boards, and was completely disoriented as to time, place and person. She saw objects in quadruplet and once thought she saw black cars, like hearses, going by on the ward. This was succeeded by auditory hallucinations of various sorts. This delusory-hallucinatory state was not a continual affair, but came in spells followed by periods of relative sanity. She could predict the onset of one of these attacks by a sort of prodromal aura. The general noise and bustle of the ward would fade away from her perception and she would suddenly feel tense and insecure. She would be gripped by a great fear and at these times believed that she was going to die. She would call for her daughter that she might see her once again before dying. When the spells left her, she would become sheepish and profusely apologetic for causing trouble. It became necessary to move her to a single room because of the disturbance she created on the ward.

She was placed on four grains of dessicated thyroid extract by mouth per day in divided doses, and prostigmine and abdominal stupes for the abdominal distention. Adequate sedation was achieved with paraldehyde.

In four days she was well-oriented and had quieted down considerably. Her demeanor was improved, she was more alert, and her speech was quicker in tempo. Her pulse had come up to 80 per minute. Her skin was not as dry and the abdominal distention was relieved.

By the sixth day of therapy, she had improved sufficiently to be up and about. All her psychotic tendencies had disappeared and she was able to concentrate on reading and sewing for the first time in months.

On the fourteenth hospital day, a BMR was plus 5 per cent and the serum cholesterol was 160 mg. She was discharged on the 20th hospital day, at that time taking six grains of thyroid per day.

During the first two or three weeks of followup in the Medical Clinic, her only complaint was that of swelling of the ankles, which prevented her walking at any great length. A serum total protein was found to be 3.6 Gm. As it was felt that too great a quantity of "deposit protein" was being oxidized and eliminated with the current dose of thyroid extract, this was decreased to four grains per day.

After two weeks on this dosage and on a high protein intake, her serum protein came up to 9.6 Gm. and her ankle edema disappeared. Her hemoglobin rose to 82% and a red blood count was 4,150,000. The BMR was reported as plus 14 per cent. She was eating and sleeping well, had resumed most of her normal activities, and was completely asymptomatic.

SPINAL ANESTHESIA IN VAGINAL DELIVERIES

concluded from page 724

by an attendant who must watch and feel for the uterine contractions. We have found that in a posterior position, rotation is materially retarded. There is also some tendency for the retardation of spontaneous rotation in anterior positions but the relaxation of the soft parts facilitates forceps delivery. That there are certain dangers must be borne in mind at all times, but in the hands of a trained anesthetist, spinal anesthesia is definitely satisfactory. It gives a dramatic and effective relief to the discomfort of labor.

The simplicity of the technique[6] requires a minimum amount of paraphernalia. We copy Willis Brown in saying that with a relative amount of safety one can obtain the four freedoms of obstetrics:

(1) Freedom from labor pains

(2) Freedom from fetal asphyxia

(3) Freedom from the risks of an indwelling needle or catheter

(4) Freedom from constant physician attendance

There can only be freedom from fetal asphyxia[7] in regulated dosage of the anesthetic drug as we have attempted to do with our dosage table. Frequent blood pressure readings and prompt institution of treatment if there is a marked fall or if the systolic reading drops below 80 m.m. of mercury and fetal heart tones checked often and 100% oxygen administered if a bradycardia persists.

Our experience with low spinal anesthesia has led us to the belief that it is not practical as a routine obstetrical procedure because of the limitation of time or the relative shortness of its duration. It is, however, the method of choice in operative deliveries or in a vaginal delivery where the time factor does not extend over 1½ hours.

We feel that spinal anesthesia has a definite place in the obstetrician's armamentarium and that it is a safe procedure when administered by one who is fully aware of the possible dangers and is capable of combating them.

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NEW ENGLAND LEADERS

Two Rhode Island physicians have been honored this Fall with the leadership of New England specialty groups. Dr. George W. Waterman, vice-president of the Providence Medical Association, is the President of the New England Obstetrical and Gynecological Society, while Dr. Emery M. Porter, past president of the Providence Medical Association, is the new President of the New England Surgical Society.

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INTERNAL MEDICINE IN CENTRAL EUROPE

The following impressions are recorded as the result of what must be admitted to be anything but an adequate opportunity to observe the work of leading European clinicians in the field of Internal Medicine. The writer, during a stay of nearly three months in Munich, did, however, meet a number of physicians who had, before the outbreak of World War II, held professorial rank in medical schools in Hungary, the Ukraine, the Baltic States, Poland and elsewhere. He also became acquainted with a few German clinicians in the course of his work as a member of a five man medical Teaching Mission which was conducting two four-week refresher courses for physicians of the Displaced Persons of Western Germany and Austria. In the days when Friedrich Müller was probably the leading internist of Europe, Munich was, to a great extent, the Mecca of the physicians of the world. One of the pupils of this great teacher, Dr. Frederic Valentine, is Physician-in-Chief at the Altersheim Hospital where these courses were given. He was of the greatest help to the Teaching Mission, both in ward rounds and clinical discussions into which he entered with vigor and enthusiasm. One of his assistants, Dr. Daffner, was also a German, as was Professor Singer, pathologist to the hospital. It was also the privilege of the writer to assist Dr. Hanns Baur, another former pupil of Fredrich Müller, with the translation into English of a book which he has written. Thus it has been possible without pretending to make even a partial survey of medical progress or achievement, for the writer to gain certain impressions concerning European medicine which may be of some interest.

In considering this subject no description of medicine as carried out in the American, British or French installations in their respective zones need be included. Such medicine is but an extension of the facilities of the respective countries to their troops and other nationals in occupied territory. Uufortunately, contact between the medical officers of such installations and the local profession and the D.P. doctors is almost non-existent. It is true, however, that in Munich, certain of the medical officers of the 98th General Hospital of the U. S. Army were sent to the Altersheim to attend the demonstrations of Professor Singer, the pathologist. In general, it may be said that this Army hospital and, I am told, the 97th General Hospital in Frankfurt as well, are excellent examples of American medicine and are presenting to the

young officers assigned to their departments of medicine the opportunity to acquire an excellent training. They cannot, however, be considered as a part of European medicine, with which we are concerned.

In discussing medical problems with European clinicians one is led to believe that there is among them somewhat more respect for authority than is seen in the United States. By this I mean a tendency to accept a dictum if advanced by a professor of wide reputation even if not supported by an adequate basis of demonstrable fact. And on the part of such leaders of the profession one senses at times a tendency to slip into the realm of medical philosophy and to advance an hypothesis because it is attractive and offers an excellent explanation of the problem in hand. This tendency is by no means universal, nor is it, one must admit, limited to Europeans. On the whole, however, one is, I believe, justified in the statement that a strict reliance on careful observations and an unwillingness to theorize far beyond reasonable conclusions based on such observations is less the rule in Europe than in America.

When applied to the clinic the result of such a tendency is exemplified in the wide use of hormonal preparations in a manner which is familiar to the American physician only as the practice of those of his colleagues here whose honesty and sincerity he is inclined to doubt. An extreme example is the use of a preparation called "corhormone," said to be an extract prepared from the bovine fetal heart at a time before any cardiac nerves had been developed and therefore, so the theory goes, when the continuation of the heart beat was due to humoral stimulation. Such an extract, supposedly containing a "cardiac hormone" was given to aged patients with failing hearts. This was explained in good faith to the writer by a physician who had shown himself in general to be an able clinician.

The preference for injectable remedies is notable throughout Europe. This does not, however, include the use of any such quantities of intravenous fluids as are used in this country (which suggests, as mentioned by Dr. P. P. Chase in his article on German Surgery, that perhaps we may have gone to the opposite extreme.) Transfusions are used when needed, but not as frequently as is probably desirable, and the use of saline and dextrose solutions certainly seems to an American to be definitely insufficient. (This, in many hospitals, is partly due to a lack of supplies and equipment.) Hormones, vaccines and also some of the commoner drugs are, however, freely injected. In the treatment of congestive cardiac failure, for example, it is the common practice to use strophanthin intravenously, not only during the initial stages but also as routine maintenance dosage throughout the patient's stay.

In spite of these variations from what seems to us the normal in practice it is only fair to admit that the clinical work that we of the teaching mission observed was on the whole good. As far as basic training is concerned the average European clinician with whom we came in contact appeared to be well grounded. The routine laboratory procedures such as electrocardiography, roentgenographic studies, hematology, and biochemical tests of blood and urine seemed very adequate although certain examinations were being used that have been abandoned in this country.

Information as to medical advances in the United States and elsewhere is gradually reaching the European clinician. Besides the Medical Missions which have visited university centers during the past three summers and our own courses given to D. P. physicians, a small and quite inadequate amount of material is copied in some of the European publications which are available. There is, however, a great need for the systematic distribution of American medical journals among physicians both in the D. P. and native groups.

Certain comments on the work in specific fields may be worth while. In cardiovascular disease, for example, one can say that electrocardiography and roentgenological studies were excellent. The importance of sodium restriction, however, in congestive failure had not been appreciated. In the same way the newer work on nephritis, especially the appreciation of lower nephron nephrosis as a clinical entity, was something with which almost all the clinicians with whom we came in contact were not familiar. In the field of respiratory disease they were, on the whole, well informed and the work of the sanatorium for tuberculosis, which it was our privilege to visit, seemed to us to be excellent and up to date. Diseases of the liver, especially the role of proteins and lipotropic substances was quite unfamiliar to them. Their knowledge and treatment of infections, particularly the so-called "contagious" group, appeared to us particularly confused. With certain prophylactic procedures they are thoroughly familiar. (The work on B.C.G. for example, has been carried much further in Europe than in this country.) On the other hand their isolation of patients with contagious disease, their "medical asepsis," is so crude as to be almost non-existant. Sulfonamides are available and also penicillin, the latter in fairly adequate amounts. Streptomycin is also available for cases in which it is particulary needed—but the supply was, when we were in Europe, very limited. (These statements regarding these antibiotic and chemotherapeutic agents apply to the hospitals of the D. P. physicians who are supplied

continued on next page

through the International Refugee Organization and may not apply to the native clinics of the other European countries west of the "iron curtain.")

The picture is still confused. We have native medicine in Germany suffering from the results of political degeneration under the Hitler regime plus the effects of military defeat. We have inside Germany over 2400 D. P. physicians, many of them excellent clinicians, working under conditions of poor equipment and a lack of educational facilities. We have the universities throughout Europe struggling to re-establish their work on a high plane. The help that has been received from this and other countries has been valuable as far as it has gone, but much more is needed. The establishment of the World Health Organization of the United Nations and the independent World Medical Association is of good omen and should have the support of physicians throughout the world.

CASE FINDING IN TUBERCULOSIS

The realization that tuberculosis can be eradicated as a significant infectious disease has spurred all health organizations to greater effort to accomplish this goal more quickly. Mass surveying of population groups have aided greatly in revealing hitherto unsuspected sources of infection. Prior to the perfection of miniature roentgenology and mobile x-ray units, the survey of large groups was difficult and cumbersome to the degree that it was impractical on a wide scale. Now, thanks to the research in photofluorography, we have available an easy, practical, and economical method of discovering contagious cases and suspects. The programs conducted here and elsewhere have been for the most part, on a voluntary basis. As such they reveal that about 80% of the people in a survey area are cooperative. It is gratifying to know that those who refuse are allowed to exercise this freedom of choice; and are neither forced to be x-rayed or punished because of their decision.

The morbidity and mortality from tuberculosis has decreased steadily since before the availability of these newer adjuncts for detection. The ultimate goal will be accomplished anyway. These surveys should accelerate the attainment. We should not, therefore, make it a criminal offence to have tuberculosis. The objective must be accomplished by an increased awareness by each individual of his responsibility to his fellow-man. This may be more readily secured if each physician encouraged his patients to accept these services when available. It serves a good cause for one patient to hear another say. "I'm for it. My doctor says it is O. K." Let us have a universal agreement. Let no doctor discourage it.

With the detection of definite or suspicious tuberculosis, case finding takes on an even more important role. The suspicious case must be followed closely by sputum examinations, blood studies, and further x-rays until the presence or absence of actual disease is determined. This is the function of the private physician. If he does not wish to do it, it is his privilege to elicit the aid of a private consultant or to turn it over to public health authorities. In the actually diagnosed cases, again it is the function of the private physicians to examine their patients who are contacts. There is a prevailing feeling among some physicians that contacts do not need x-rays, if they have been examined and found negative. A greater disservice to a trustful patient cannot be performed than to perpetuate the illusion that he (or she) is free of disease because you (or I) do not discover pathological signs by stethescope or history. It is really mandatory for us as honest physicians to tell all contacts that a chest x-ray is absolutely necessary for appraisal of the pulmonary status.

Where there are many contacts expense may be a factor in wanting to limit the number of x-rays. This, however, is not justified since there are readily available free clinics for this service within reasonable distance of all.

We are to see more and more x-ray surveys of all segments of the population. These are necessary because medical science has been unable to discover any other efficient method of protecting innocent people from what can be a horrible scourge. We must cooperate.

CHANGES

Change is always with us and is to be anticipated. We must make provision for it accordingly but when it comes upon us unexpectedly and rapidly it can be exceedingly disconcerting. Two of our large hospitals have had disturbing examples of this recently. At St. Joseph's Hospital the medical department lost an outstanding man by the sudden death of Dr. O'Rourke and now within a few weeks Dr. Belliotti, a leader in hospital and society activities, has been taken away by death from the surgical service.

The Rhode Island Hospital has had even more upsetting developments in its professional economy. At the beginning of the year Dr. Burgess finished a brilliant service as Chief of Medicine. This was because of the age requirement and was anticipated. He had a worthy successor in Dr. Guy Wells but again death intervened. Like Guy Wells, Herman Lawson had great experience in hospital administration and much clinical acumen. But now after a few weeks the Veterans Hospital takes this strong man away. It is an excellent arrangement for the new institution but increases the depletion in the ranks of the older foundation. The latter is ex-

tremely fortunate to have such an experienced capable man as Marshall Fulton to carry on.

In the midst of these great losses in one leading department another fundamental part of the hospital has to adjust itself hurriedly to radical changes. The Pathological Laboratory has made striking advances in size, diversity, and quality under the leadership of Dr. Clarke. He has been singularly fortunate in having associated with him such an outstandingly able pathologist as Dr. Robert Williams. The entire staff has felt secure in its reliance on the knowledge and judgement of these two unusual men. Now Dr. Clarke has gone to St. Luke's Hospital, New York, and Dr. Williams leaves the Rhode Island Hospital to associate himself with Dr. Lawson at the Veterans Hospital.

At the best it will be hard for the hospital to adjust itself to the loss of all these brilliant men in such a short time.

CANCER CONFERENCE

The response of Rhode Island physicians to the first statewide cancer conference was most encouraging for the continuation of this type of concentrated educational program in future months. Sponsored by the cancer committee of the Society, by the R. I. Cancer Society, and by the State department of health, the Conference gave the busy physician an intensive one day symposium of cancer control procedures.

With the public thoroughly awakened to the threat of the disease, and with popular magazines devoting much space to discussion of it, every physician is faced with the necessity of keeping abreast of the latest information in cancer control. The committee of the Society is to be congratulated for the exceptional program it arranged, the visiting speakers for their fine presentations, and the physicians who attended for their support and interest as indicated by the sizeable attendance.

RHODE ISLAND HOSPITAL STAFF DINNER

A few years ago the Rhode Island Hospital started the pleasant custom of Staff dinners. The one held at the Narragansett Hotel on Tuesday, November sixteenth was, as the others all have been, a success. A few libations opened the evening and prepared us for an excellent dinner after which Dr. Frank W. Dimmitt, President of the Staff Association, with well chosen remarks, turned the meeting over to Dr. Marshall Fulton who presided with grace, dignity, and ease.

Dr. Oliver Pratt, Executive Director and Mr. Peter Gerry, the President of the Board of Trustees, spoke. The latter also carried out the felicitous custom of presenting certificates to the retired chiefs of staff.

Then Dr. Fulton in a burst of poetic ardor introduced Dr. Alex Burgess through the medium of interesting and delightful rhyme. With the descriptive, philosophical acumen of a Samuel Butler or Alexander Pope there were enough technical details to show he was a fellow professional with John Keats, Oliver Goldsmith and Oliver Wendell Holmes. We are including in this Journal the authorized version.

Dr. Burgess told about the recent Medical Teaching Mission to Displaced Person Physicians at Munich, Germany, which he ably headed. His talk was an amplification of the article recently presented in the Journal of the American Medical Association by Drs. Findlay and Burgess. With the thorough marshalling of facts and clear straightforward exposition which we are accustomed to in his clinical talks he explained the situation of the large number of displaced doctors, the manner in which they had been carefully screened to prove their records and competence, and the excellent results which have followed their work in the camps and hospitals.

He stressed the calibre and enthusiasm of the choice group selected for this teaching course and gave in detail many incidents of the course all of which attested to the unusual high quality of this group of many nationalities.

His hearers got a vivid picture.

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WHAT GOOD ARE HEALTH MUSEUMS*

BRUNO GEBHARD, M.D.

The Author. *Bruno Gebhard, M.D., Director, Cleveland (Ohio) Health Museum.*

NEXT TO the weather, health and disease are the most talked about subjects. Women have their own ideas, right or wrong, of what is good for their health, for their husband's health and for their children's health, as does the male sex. There is a natural curiosity in everyone, child or adult, about the workings of the human body and about what makes them sick. There is no doubt also, that there is a small percentage of people with a morbid fear, but they are not made, they are born that way, with a mental make-up which makes them more introspective and sensitive to their physical reactions. Little can be done for them, and certainly nobody has as yet died of cancerphobia.

Sound health facts are based on the findings of human physiology and personal hygiene is nothing more than applied biology. Health education starts in the family and the first five years in our lives are the most important ones. It is during these years that we acquire our good and bad health habits and our likes and dislikes of certain foods. Children usually do not turn out much better than their parents; they are more or less "copycats". Expectant Mother, and so-called Expectant Father Classes are a good beginning of a modern parent education program.

Health care is big business in every country. In this country especially, commercial advertising is the Number 1 Health Educator. Advertising uses the propaganda approach; it is successful only where it uses emotional appeal. Commercial advertising can be a good, but also a very bad health educator. It surely has been very effective in making the American people the greatest milk consumers and citrus fruit eaters; and if somebody cares to eat an apple a day, which makes 366 this year, there will be no objection. But there is also a negative side. Here is a very recent sample; a new method has been developed to reduce tooth decay forty percent. Local application of a fluoride solution at the ages of 3, 7, 10 and 13 years will reduce the number of cavities in children's teeth. This method is only effective after the dentist has cleaned and dried the surface of the tooth and by painting each tooth with the special solution. But, the public has already been offered commercial preparations such as tablets, dentrifices or mouth washes containing fluoride and claiming to be effective, which they are not as proven and stated by the American Dental Association. But fluoride treatments can only do half the job; tooth brushing and regular dental care is still needed and it is just as important to keep "the consumption of candy and other sweets to a minimum". This was so stated in an official pamphlet of the American Dental Association and the sugar industry promptly started to distribute material to the food editors of our newspapers saying that there is little or no relationship between sugar consumption and caries. We could tell a similar story on our profession regarding the indiscriminate use of aspirin, vitamin pills, and-so-forth. There may be no harm in their use, but they certainly represent an economic waste. Manufacturers of all kinds of products have even invented what has been called "advertising plagues". The January 9, 1948 issue of PRINTER'S INK published a list containing more than 300 advertising diseases or plagues that were brought into the public spotlight so that a cure might be affected by the remedy offered for sale by the advertiser. These plagues, or advertising diseases "differ in one important respect from those that continue to baffle science and medicine — for they can be relieved or cured by proper doses of certain advertised products". The list is alphabetically arranged. Here are some samples of the lesser known ones;

Acid Blues	Mother Hubbard Ankles
Barn Odor	Nervous B. O.
Calendar Fear	Office Hips
Dermerosion	Pendulosis
Evening-gown Stretch	Quesy Stomach
February Gray	Reception Room Blues
Goo	Stay-home-itis
Hi-tense-itis	Too Frequent Elimination
Intestinal Fatigue	Undie Odor
Jittery Nerves	Vacation Knees
Knuckle Grime	Whiskitosis
Lime Scum	Yawning Time

The gullibility of the people seems to be unlimited, and there is little help to be expected from those who quickly say "there should be a law against it". It takes sound, long-range, planned and con-

continued on page 734

*Presented before the Woman's Auxiliary of the Rhode Island Medical Society, at Providence, November 10, 1948.

Changes in fundus in degenerative vascular disease associated with arteriosclerosis, hypertension and diabetes mellitus.

Tortuous veins and arteries, with the latter varying in caliber, are part of the fundus findings of arteriosclerosis and hypertension.

White areas of exudation are seen. Hemorrhagic areas are also present in this fundus, and may be associated with generalized arteriosclerosis, hypertension and diabetes mellitus.

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WHAT GOOD ARE HEALTH MUSEUMS

continued from page 732

tinued popular education to change the knowledge, the habits and the atttitudes of people regarding the care of health, the prevention of disease and the prolongation of life.

We have mentioned parents as health educators; we have somewhat critically surveyed business using radio and newspapers as health educators; there are the life and accident insurance companies which have contributed in a very positive way to mass education; there are the many voluntary health organizations, the official health departments, and there are, last but not least, the teachers in the schools who practice health and physical education day in and day out. Where does the medical profession enter into the picture?

The Doctor as a Health Educator

The good doctor is always a health teacher as far as the individual patient is concerned. Eighty percent of the work in pediatrics is education of the mother and the same is true for mental hygiene and psychiatry. Whether the patient has diabetes or tuberculosis, he cannot be treated without individual counselling and education. So far so good. But where the organized medical profession has been slow is in community health education. There are two reasons for this state of affairs. Public health has become in the last thirty years, a separate technical profession having its own plans and policies which are not always in accord with organized medicine. This is something to be expected in modern society but it surely calls for an active program of public relations.

The shortage of physicians is another reason for the slow-down in community health education projects sponsored by the medical profession. The Bureau of Health Education of the American Medical Association has a great history in its effort and certainly is very much up-to-date in its present activities, using radio and television. But, we need more local activities to reach the mass of the people. Health education has to be guided and stimulated by the medical profession or it will be controlled by lay groups and commercial interests which often might not be in accord with what we feel is best for the people's health. In awareness of the platform of the American Medical Association advocating "the principle that the care of the public health and the provision of the medical service to the sick is primarily a local responsibility", the Cleveland Academy of Medicine started out in 1936 with a new approach to community health education. In close cooperation with the Cleveland Health Council twenty-two civic bodies including museums, colleges, schools and the newspapers, were invited to study the advisability "of establishing a permanent museum of health and hygiene where scientifically prepared material of a visual nature might be made available to the public at all times".

Role of Health Museum

Health Museums are science museums specializing in human biology, personal and public health. They have preventive medicine as their father and health education as their mother. They address themselves more to the people than to the professional groups. Their emphasis is on normal growth and development, on the maintenance of health rather than on disease information and on hygiene of environment. They featured Man and his heredity, his development from his earliest stage to old age. As the present adult generation has received only a scanty biological education the Health Museum introduces Man to himself. Medical Museums feature disease; Health Museums aim at better health for more people, health being understood as being physically and mentally at ease.

The American public respects museums as places where one can find unbiased information; where nobody tries to "sell" anything other than true facts. Even in this country preventive medicine is overshadowed by the services of curative medicine, with great hospitals as their visible expressions. Health Museums can be developed as the natural bridge between curative and preventive medicine, and Health Museums may become the visual representation of public health. Health Museums are not an accumulation of collections: they are manufactured. They take their subjects from the natural sciences as well as the social sciences. The emphasis is on informal, objective, demonstrative teaching by the eye. "Things seen are mightier than things heard" (Tennyson). Wherever possible, health exhibits should be of a three-dimensional nature and animated or, even better, allowing visitor participation.

Timeliness of the exhibit's subjects is of great importance. Our "Special Exhibit of the Month" deals with seasonal subjects, as "Colds" in the autumn, Infantile Paralysis in July, Hay Fever in August; or they parallel national educational campaigns as those on Cancer, Venereal Diseases and Tuberculosis. They are on display for only that month which is designated to that special disease.

Our 15,000 feet of exhibit space are located on two floors of a remodelled three-story building, each floor having about 13 rooms. The ground floor has a small lecture hall with a seating capacity of 125, used mainly for the showing of films. A classroom seating 50 is used regularly for expectant mother classes and school groups; storage rooms for exhibits, a small kitchen used by woman's clubs in connection with monthly meetings, are also found on the ground floor.

continued on page 736

The sweet taste of candy satisfies and pleases children. That's why *Dulcet* Tablets were compounded to resemble delicious candy in appearance and taste. That's why sick children accept *Dulcet* Tablets as a special treat . . . even when the tablets contain such potent agents as the sulfonamide compounds. *Dulcet* Tablets containing these agents are accurately medicated and will produce the same therapeutic results as other tablet forms, when used at the same level of dosage. Whatever sulfonamide is indicated—in single or combined form—you will find a choice available in *Dulcet* Tablets, as listed at left. For literature, write to ABBOTT LABORATORIES, North Chicago, Ill.

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WHAT GOOD ARE HEALTH MUSEUMS

concluded from page 734

Popular Exhibits

Following are some of the exhibits most popular with our visitors. Blood circulation is shown by a red light which travels the blood circuit when a switch is flicked on. A lever works the artificial lungs . . . a replica of the heart thumps out seventy-one heart beats a minute as a red light flashes each beat . . . the posture lady is poked into an ideal stance . . . a greatly enlarged photograph of the Cleveland Public Square shows how the blood cells of each human being, if stretched out, would cover the area of the downtown square. In another exhibit, the visitor moves the lever to change the heart beats for the various animals and fish, and learns the difference between the rate of man's heartbeat and those of the animal kingdom. In the "Wonder of New Life" room, life-size models of the Dickinson-Belskie series show the stages of birth, the growth of the embryo within the mother, the female and male organs. From these models adolescents learn the story of birth, expectant mothers learn how to prepare for their young. The Museum has the copyrights to these models, and is the only institution allowed to reproduce them for other organizations. In the dental room the "Transparent Tooth" gleams at the far end of the room, a triumph of artistry and accuracy. It shows in detail the anatomy of the average tooth. In another dental model, three hands, operated by a crank, show the proper way to brush the teeth. Turning another crank shows how and when baby's teeth will erupt in the mouth. Pushing a button shows what happens when just one tooth is lost. There are many exhibits in the room, "Food for Health". One, the "Calory Automat" is a guessing game where everyone finds, to his horror, that two doughnuts and a cup of coffee add up to 500 calories and an apple pie a-la-mode has 630 calories.

Our emphasis on visual means of communication does not, of course, exclude the use of the spoken and printed word. Guided tours, followed by one or two short film showings, take place regularly; a five minute radio program is on the air three times a week; TONE, the Museum publication, is published monthly; MAKING HEALTH VISIBLE is published, in its second edition, for professional readers, giving our basic philosophy and illustrating our techniques.

Our visitors come from all walks of life, more than half of them are adults, coming as a family. It is hard to say whether our 45,000 visitors per year represent a reasonable slice of our community — Greater Cleveland has one and one quarter million people. A special study is planned to analyze visitors' reactions and what they really get out of it. We have about five to six hundred groups coming annually, of which two-thirds are students of junior and senior high-schools.

A Community Organization

We do have outside activities. We do not wait for people to come to the Museum, however; we go to them with our loan and travelling exhibits. Voluntary and official health agencies outside of Cleveland use our loan exhibits at county fairs and at other occasions, or secure duplicates of our exhibits for permanent display. A health museum should take an active part in all community affairs so far as public health is concerned. Out of our short history one example might be mentioned. At the request of the Cleveland Welfare Federation the Museum designed a series of popular exhibits on geriatrics under the title "Live Long and Like It." A hobby and handicraft show augmented the educational exhibits, with 235 exhibitors; minimum age for participants was 65 years—the oldest being 89 years of age. More than 1,200 items were on display. It was the general opinion that this participation has helped in "mental rehabilitation" of the aged. So successful was the project that it became an annual affair.

Health Museums are the best means of cooperative advertising for the medical profession, if I may use the language of business and trade organizations. Good health education generally has always and always will increase the demand for better and more medical care. It is very dangerous to educate the people ahead of the facilities the community has to offer. Education and service must go hand-in-hand. Those who are afraid that health education increases self-diagnosis and self-treatment should keep this in mind. About one-third of our population is looking to sources other than the medical profession for the treatment and care of their ills — limited practitioners, religious cults and plain quacks. But more important is the fact that the patient always makes the first diagnosis. It is still the realization of "something is wrong with me" that brings the patients into our offices. It is still up to the patient to take the advice of his physician and do accordingly; it is still the patient who has the last word whether, and what kind of treatment is applied to his ills. We know that intelligent patients will cooperate better with their physicians. Only where health education is insufficient or is given in a wrong way are hypochondriac tendencies or abnormal fears created.

Health education of the public is never finished. It has to adapt its methods and means to the changing times. Visual education, as centered in a Health Museum, has proved it effectiveness. Seeing is easier and more convincing than limited reading or hearing. Seeing is not only believeing, it is also relieving. Health Museums can show the way to better health for more people.

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United States Dispensatory, ed. 24, Philadelphia, J. B. Lippincott Company, 1947, p. 1194.

"The objective in treatment, which is substitutive, is to assist in establishing endocrine and autonomic nervous system balance. . . ."

1947 Year Book of General Therapeutics, Chicago, The Year Book Publishers, Inc., 1947, p. 258.

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PAWTUCKET MEDICAL ASSOCIATION

The regular monthly meeting of the Pawtucket Medical Association was held at 6:30 p.m. on Thursday, October 21, 1948, in the Nurses Dining Room of Memorial Hospital. This was a dinner-meeting and was called to order by the President, Dr. Earl Mara.

The application of Dr. Peter Campellone was reported as approved by the Standing Committee and will be submitted to ballot at the next regular meeting.

Reports from the House of Delegates were given by Dr. Mara and Dr. Fox.

The Secretary read a warning from the Federal Food and Drug Administration regarding a batch of procaine hydrochloride solution manufactured by C. B. Kendall Company, Indianapolis, which has caused necrotic reactions.

Also read was a communication from the Secretary of the Rhode Island Medical Society regarding the selection of a candidate for the General Practitioner's Award given by the American Medical Association. This was tabled.

The meeting then adjourned to the Nurses Auditorium where Dr. Bert Jeremiah, Chairman, introduced the speaker of the evening, Dr. Michael DeVito, Professor of Plastic Surgery, Georgetown University.

Dr. DeVito discussed carcinoma of the skin, congenital defects and reconstructions of soft and bony tissue, illustrating his remarks with a splendid series of colored slides.

An interesting and lively discussion followed with members of the Skin, Surgical, X-ray and Pediatrics Services submitting queries and quoting results from local clinics.

The meeting was adjourned at 9:15 p.m.

Thirty-two members attended.

Respectfully submitted,

KIERNAN W. HENNESSEY, M.D.

Secretary

PROVIDENCE MEDICAL ASSOCIATION

A regular meeting of the Providenec Medical Association was held at the Medical Library, on Monday, November 1, 1948. The meeting was called to order by President Philip Batchelder at 8:30 p.m.

By consent of those in attendance the reading of the minutes by the Secretary was omitted. There were no reports of committees.

The President announced that he was appointing a committee to prepare the Association's tribute to the late Dr. John Pinckney to consist of Dr. J. Murray Beardsly and Dr. Elihu S. Wing.

The President reported that he was in receipt of a communication from the Friends of Exeter School asking him to notify the members of the Association relative to the proposed referendum to be voted on November 2 for a bond issue for the extension of the facilities of the school. He briefly reviewed the specific purposes of the bond issue.

The first speaker of the evening was Mrs. John Langdon, Executive Director, of Crippled Children and Adults of Rhode Island, Incorporated. Mrs. Langdon briefly outlined the development of the Meeting Street School as a Cerebral Palsy Center and she then showed a motion picture depicting the activities carried on at the school.

After the showing of the motion picture Mrs. Langdon explained how her organization was prepared to work in cooperation with the medical profession.

The second speaker was Dr. Meyer Saklad, Chief of the Department of Anesthesia, Rhode Island Hospital, who reported on the "MEDICAL MISSION TO POLAND AND FINLAND" of which he was a member. He discussed the medical conditions in the countries of Europe that he had visited and he described some of the educational work that was carried on by the mission. His talk was concluded with the showing of many colored lantern slides taken while on his trip.

The meeting adjourned at 10:05 p.m.

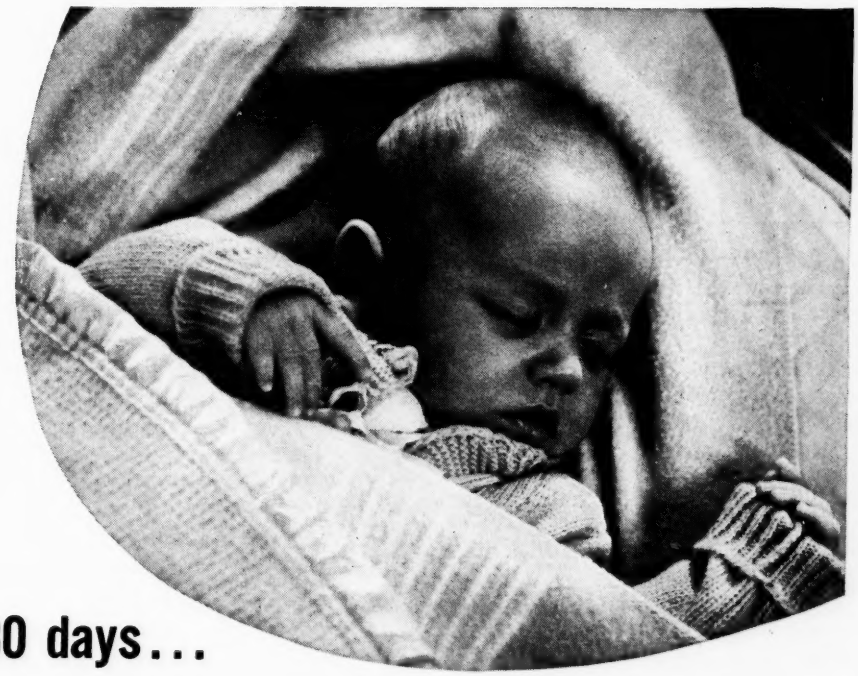
Attendance 115

Collation was served.

Respectfully submitted,

JOHN E. FARRELL

Executive Secretary



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MEDICAL LIBRARY NOTES

THE LIBRARIAN of the Rhode Island Medical Society announces the recent addition of the following books:

ANTIBIOTICS

Donald G. Anderson & Chester S. Keefer—*The Therapeutic Value of Penicillin.* Ann Arbor, 1948. Edwards Brothers.

Chester S. Keefer & William L. Hewitt—*The Therapeutic Value of Streptomycin.* Ann Arbor, 1948. Edwards Brothers.

Perrin H. Long — *A-B-C's of Sulfonamide and Antibiotic Therapy.* Saunders. Phil., 1948.

CONGENITAL MALFORMATIONS

Douglas P. Murphy—*Congenital Malformations.* 2nd ed. Lippincott. Phil., 1947.

LABORATORY METHODS

R. B. H. Gradwohl — *Clinical Laboratory Methods and Diagnosis.* 4th ed. 3 vols. Mosby. St. L., 1948

NERVOUS SYSTEM

W. K. Livingston—*Pain Mechanisms.* Macmillan. N. Y., 1947

Joseph J. McDonald & others—*Correlative Neuroanatomy.* 4th ed. rev. University Medical Publishers. Palo Alto, 1948.

NUTRITION

Maladie de Famine. Récherchés Cliniques sur la Famine Executèes dans le Ghetto de Varsovie en 1942. Varsovie 1946. Gift of the American Joint Distribution Committee.

Symposia on Nutrition of the Robert Gould Research Foundation. Vol. I. Nutritional Anemia. Edited by Arthur Lejwa. Cincinnati, 1947.

POLIOMYELITIS

Collected Reprints of the Grantees of the National Foundation for Infantile Paralysis, 1947, Vol. VIII. N. Y., 1948. Gift of the Foundation.

RADIOLOGY

Fred J. Hodges & Ira I. Kaplan, editors—The 1948 Year Book of Radiology. Year Book Publishers, Inc. Chic., 1948.

SERIALS

Index Catalogue of the Library of the Surgeon-General's Office, U. S. Army (Army Medical Library) 4th ser., Vol. X, M1 (M-Mez). Wash., 1948. Gift.

Transactions of the American Clinical and Climatological Association. Vol. 58 (59th, 1946), 1947; Vol. 59 (60th, 1947), 1948. Gift.

Gifts of books and journals were received from Doctors Carney, Corrigan, Kramer, McWilliams, Welch and Wilcox and from the Peters House Library, the Providence Lying-In Hospital, the Providence Public Libary and the Rhode Island State Library Extension.

BOOK REVIEW

CONGENITAL MALFORMATIONS

Douglas P. Murphy, M.D. Second edition, 1947. J. B. Lippincott Co.

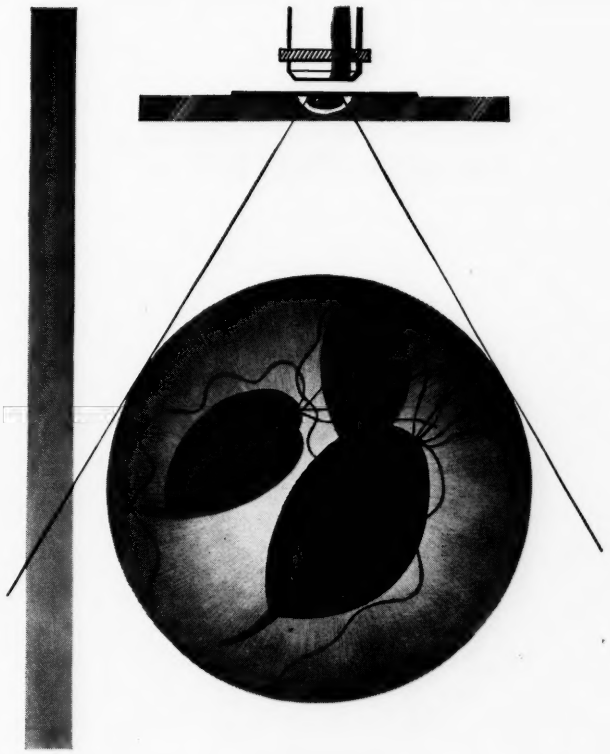
It has been customary, in comforting the unhappy mother of a congenitally malformed child, to assure her that she is perfectly safe in proceeding to have another baby, in view of the extreme rarity of a recurrence. This little volume completely dispels this comfortable delusion. In an extensive statistical study, Doctor Murphy, whose interest in this subject goes back more than twenty years, conclusively shows that the chance of having a second malformed offspring is 25 times greater than in the general population. Instead of the usual incidence of one in 213 births, it subsequently becomes one in eight births. There are records of a number of families where as many as four children have manifested the same or various other malformations.

That these defects are genetic in origin is abundantly demonstrated, except for two environmental factors, vis: fetal irradiation in utero and maternal rubella, occurring in pregnancy. While the evidence for rubella is considerable and convinces Doctor Murphy, generally it is not accepted as proven, nor would all accept his dictum that therapeutic abortion is always indicated under these circumstances.

Making this book of even greater interest locally is the fact that the Providence Lying-in Hospital and the Glasgow University Hospital in Scotland, report the highest incidence of congenital malformations in the world. Obviously this high incidence, like that of diabetes in Massachusetts and Rhode Island, is due solely to diligent search and complete reporting.

CHARLES POTTER, M.D.

To combat the growth of pathogens in the vaginal secretions



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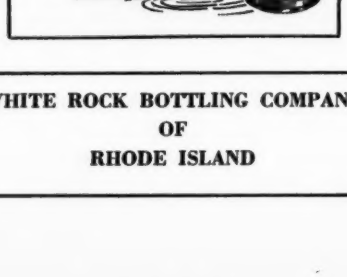

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TO ALEX BURGESS

In Regard to Displaced Persons

We are proud, Doctor Burgess, upon this occasion,
To give you a greeting—indeed, an ovation.
To welcome you back from a far distant place.
Where you went with our own Peter Pineo Chase.

* * *

We admire the spirit that took you to Munich,
To don there with Peter, the mantle and tunic
Of teacher, professor, advisor and friend,
To docs whose misfortunes are world without end.

* * *

We are glad, Doctor Burgess, you've returned to the fold,
To the land of your birth, where the Democrats bold
Have averted becoming displaced persons,
While our sense of security worsens and worsens.

* * *

I'll tell you just what I refer to by that,
One wonders if now at the drop of a hat
The Washington boys with an itch and a tingle
Won't drag out that bill by old Murray and Dingell.

* * *

This bill fraught with such psychiatric elation
To improve, over night, the health of the Nation,
Would land us docs as a professional class
Midway between supine and flat on our————.

* * *

You have seen how it worked in some places that tried it,
Please tell us how you'd like to live right inside it.
Perhaps we're alarmists, but I tell you true,
I'm worried about what this Congress will do.

* * *

The costs of a sickness have gone up so high
That for many a person, it's cheaper to die.
While business stays good, we at least can give thanks
That sick folks still have got some cash in the banks.

* * *

What gives me the jitters is what our profession
Will do if there happens to come a depression,
And folks can't afford $15 a day
For a room on Ward G or a bed on Ward K.

* * *

The crux of the matter is not that we docs
Don't give adequate care to the indigent crocks,
The rub comes because every Tom, Dick, and Harry,
Can't be sick and have plenty of dough left to marry.

* * *

The public don't care what will happen to us
In trying to settle this fuming and fuss,
What the government wants is good care for the millions,
To hell with the cost — even billions and billions.

* * *

No one will deny that's a worthy objective,
The important decision is, "What's the corrective?"
The question to settle when stripped to the bone
Is that we don't throw away bread for a stone.

* * *

We'd better admit that the pressure is heavy
To run our profession by government levy
I think we'd be wiser to give help and guidance,
Than buck things with loud and apposing connivance.
Alex Burgess, you've gone to the top of the tree
With your place on The Board of the College of P——.
You should utilize now your influence and weight
In helping avoid a calamitous state.

* * *

You should help Oscar Ewing and Barney Baruch
And indeed Harry Truman and Fishbein — the Duke
To see that some sensible conciliation,
Must come, lest we ruin the health of the nation.

* * *

Join up with your confreres in high standing places,
And go down to Washington, show them your faces,
And tell them, "Don't push this thing through over night,
If we must have State Medicine, let's have it right."

* * *

There's no time to go easy, or carry a stick
Somebody must do this, and must do it quick
Before our high standing as docs is erased
And we too become among Persons Displaced.

ELECTED TO COLLEGE OF SURGEONS

At the convocation of the College of Surgeons, held in Los Angeles in October, the following Rhode Island physicians were received into Fellowship: Dr. M. Osmond Grimes of Newport, Dr. Edmund C. Laurelli of Pawtucket, and Drs. Jack Savran and Carroll M. Silver of Providence.

MALPIGHI MEDICAL CLUB

The regular monthly meeting of the Malpighi Medical Club was called to order by its President, Dr. Frank D. Fratantuono, at 9 p.m. on October 26, 1948. The minutes of previous meetings were read and accepted.

A communication from Professor Forni of the Department of Surgery at the University of Bologna, Italy, was read to the members. He inquired as to the possibility of obtaining from the club an anesthesia apparatus similar to the one donated to Professor Dogliotti of Turin University.

A motion was made and passed empowering the President to authorize the purchase of a slide projector.

A motion was made and passed authorizing the President to appoint a new membership committee.

A discussion followed on the feasibility of the club holding a New Year Party.

The scientific portion of the meeting had Dr. Gaspar Angelo of Cambridge, Massachusetts, talking on "Office Procedures in Proctological Disorders". He illustrated his talk with some interesting colored slides. After discussion and a question period, the meeting adjourned at 11:15 p.m.

Collation followed.

E. ARTHUR CATULLO, M.D.
Secretary

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SAMPLE STUDY OF CASH SICKNESS CLAIMS

Of a total of 2,645 recent claims for Cash Sickness Compensation which were the subject of a statistical analysis this month, (October), 1,924, or 72% were filed by workers engaged in manufacturing industries. As compared to this percentage the current figure of all manufacturing employees in the state is 55% of the total employment. A further breakdown showed that of the 1,924 industrial workers, 958, or 49%, were specifically employed by textile concerns. This figure is nearer to the state percentage of 41% of all industrial workers employed in textile work. Sixty-two different industrial classifications were represented in the total group of claims analyzed, forty-four, or 71% of them being non-manufacturing classifications which were represented by only 28% of the claims.

The figures and percentages shown in the analysis do not represent a cross section of all Cash Sickness claims. They are, rather, a sample study and therefore conclusions drawn from them must be subject to the limitations placed upon all sample studies. However, they do give a clear picture of the Cash Sickness Compensation claims which are currently active and indicate, even as a sample study, the source of claims being filed and the general characteristics of the claimants.

The analysis contains reports on six factors: (1) age groups, (2) medical diagnosis by broad groupings, (3) city and town, (4) benefit rate, (5) maximum credits and base year earnings, and (6) industry. Each breakdown supplies further information concerning the sex and marital status of claimants.

In the breakdown by age groups, 827 of all claims were concentrated in the twenty to twenty-nine year group. Six hundred and forty-one of these were female and of that number 405 were pregnancy cases. Of all claims filed by married women in all age groups, 47% were filed for benefits during pregnancy.

Of all claims analyzed, it was found that 65% fell into four major categories of illnesses. Twenty-two per cent were for pregnancy; eighteen per cent had suffered injuries or the effects of poisoning; fourteen per cent had diseases of the digestive system; and eleven per cent had diseases of the circulatory system. The remaining 35% were distributed among eleven other types of illnesses, with 7% shown as suffering from diseases of the nervous system and sense organs, including mental disorders.

It was determined that 1,127, or 43% of all claims were filed by males. Of the 1,518 filed by females, 1,223, or 81% were married. The average age of all claimants was 39 years with the average for males, 45 years, being ten years over that for the females. Only one-fifth of the male claimants in the group were under 30, while nearly one-half, or 49%, of the females fell into that age group.

Other analyses showed that the distribution of claims by city or town follows fairly closely the percentage distribution of workers throughout the state. The average potential weekly benefit amount of all cases analyzed was $17.25 with $17.59 for males and $16.99 for females. Average potential credits was $279. Six per cent of the total group had previously filed Cash Sickness claims in the current benefit year.

MONTHLY BULLETIN — Rhode Island Unemployment Compensation Board—Volume II—October 1948—No.6

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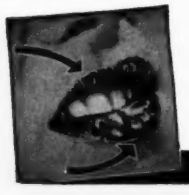

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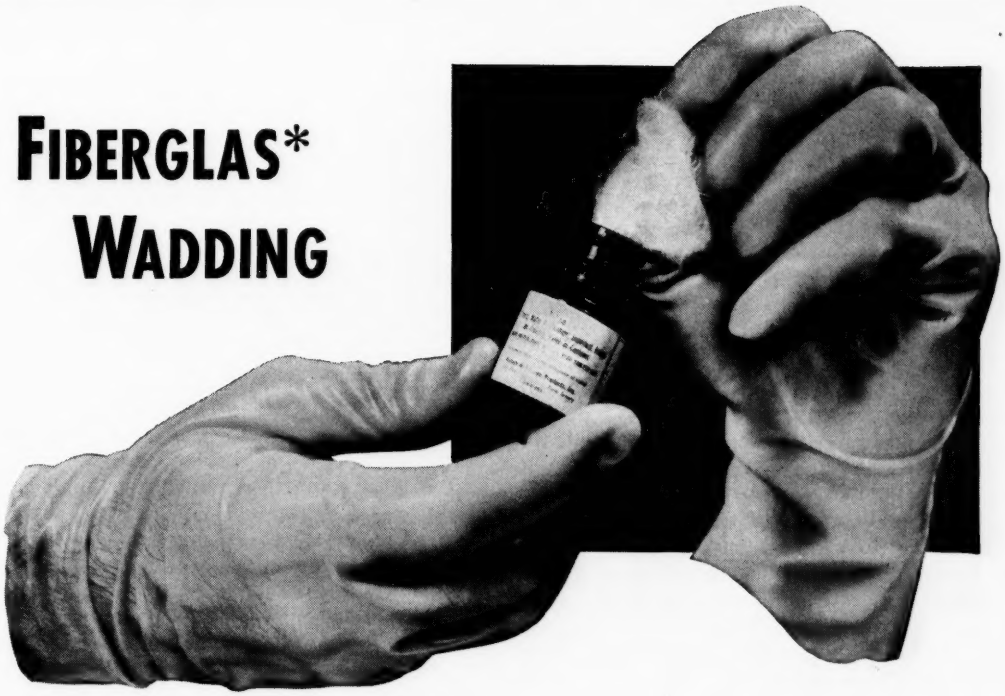

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BOOK REVIEWS

CLINICAL LABORATORY METHODS AND DIAGNOSIS, Vol. I

R. B. H. Gradwohl. Fourth edition. C. V. Mosby Co., St. Louis, 1948. pp 1295.

Same. Volume II—R. B. H. Gradwohl. Fourth edition.

C. V. Mosby Co., St. Louis, 1948, pp 1295 to 2284.

Same. Volume III—Gradwohl and Kouri. Fourth edition.

C. V. Mosby Co., St. Louis, 1948, pp 819.

This book, first published in 1935 as one volume, appears now, revised and brought up-to-date, as three large volumes of somewhat over 3,000 pages of text. Volume III is devoted entirely to Parasitology and Tropical Medicine. Since it has a joint author it has a separate index and separate paging. Volumes I and II have only one index in Volume II, though much time could be saved for readers if the index appeared in each volume.

There are many illustrations, a total of 1,169, of which 58 are in full color. The color plate opposite page 54 in Volume I is not very true, but in general the color plates are good.

It would be difficult for one person to judge such a collection of laboratory information. Volume I covers urine, blood, gastric analysis, puncture fluids, feces, and special tests such as allergy, mycology, and vitamin assay.

Volume II covers bacteriology, serology, postmortem examinations, tissue technique, museums, toxicology, crime detection, basal metabolism, and electrocardiography. Dr. Gradwohl acknowledges the help of several specialists in writing on such an array of subjects.

For each subject a brief historical outline is given, methodology or laboratory techniques are described, and this is followed by a discussion of the application of the results obtained in the laboratory to the diagnosis of disease. Alternate techinques have been described so that their difficulty and accuracy can be suited to the facilities and situation in most cases.

Phase microscopy, Rh types, antibiotic assay, thymol turbidity, and a discussion of blood cholesterol which leads to the conclusion that this determination is seldom of significant value, indicate an earnest attempt to have a modern revision. There is, however, no discussion of the war-gained significant advances in sub-fractionation of plasma or serum proteins, which may or may not be an important omission.

Inaccuracies, such as the statement that the chlorides of spinal fluid are about 740 mg. per 100 c.c., when the true value is less than 450, are bound to appear in such a lot of information, but very few were noted. Typographical errors were not noted so they too have been kept low.

This set of three volumes should be a valuable and comprehensive reference for every clinical laboratory, and could be read with profit by laboratory technicians, physicians, and clinical pathologists. Certain phases of its broad coverage are of interest to museum personnel, crime detection officers, public health officials, lawyers and judges, medical artists, dairy products manufacturers, and others.

RUSSELL O. BOWMAN, M.D.

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BIBLIOGRAPHY: (1) De Lee, J. B. and Greenhill, J. P.: Principles and Practice of Obstetrics, Saunders, Philadelphia, 1947, p. 95. (2) Bicknell, F. and Prescott, F.: The Vitamins in Medicine, Grune and Stratton, New York, 1947, p. 663, p. 189, p. 326.

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VITAMIN D has been so successful in preventing rickets during infancy that there has been little emphasis on continuing its use after the second year.

But now a careful histologic study has been made which reveals a startlingly high incidence of rickets in children 2 to 14 years old. Follis, Jackson, Eliot, and Park* report that postmortem examination of 230 children of this age group showed the total prevalence of rickets to be 46.5%.

Rachitic changes were present as late as the fourteenth year, and the incidence was higher among children dying from acute disease than in those dying of chronic disease.

The authors conclude, "We doubt if slight degrees of rickets, such as we found in many of our children, interfere with health and development, but our studies as a whole afford reason to prolong administration of vitamin D to the age limit of our study, the fourteenth year, and especially indicate the necessity to suspect and to take the necessary measures to guard against rickets in sick children."

*R. H. Follis, D. Jackson, M. M. Eliot, and E. A. Park: Prevalence of rickets in children between two and fourteen years of age, Am. J. Dis. Child. 66:1-11, July 1943.

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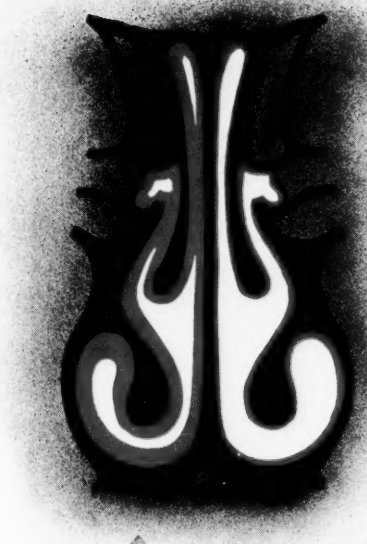

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